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**OFFICIAL**

PDNO 10003488-1

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: : Confirmation No. 6593  
 Janice Nickel :  
 Serial No. 09/900,662 : Examiner: P. Huber  
 Filed: July 6, 2001 : Group Art Unit 2653  
 For: DATA STORAGE DEVICE INCLUDING NANOTUBE ELECTRON  
 SOURCES

Mail stop Amendment  
 Commissioner for Patents  
 P.O. Box 1450  
 Arlington, VA 22313-1450

**RULE 131 DECLARATION BY INVENTOR**

I, the undersigned, declare that:

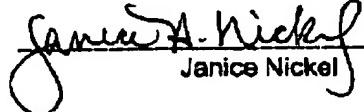
I am an inventor in the above-captioned patent application.

I prepared an invention disclosure entitled "Novel emitter for ARS application"(the "Invention Disclosure"). A copy of the Invention Disclosure is attached. I signed and dated the Invention Disclosure on April 13, 2000 and submitted the Invention Disclosure to the intellectual property department of Hewlett-Packard Company.

All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

29 June, 2004

Date

  
Janice Nickel  
 Janice Nickel

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 HEWLETT <sup>®</sup> PACKARD	<b>INVENTION DISCLOSURE</b>		PAGE ONE OF _____
PDNO	10003488	DATE RCVD	4-13-80
		ATTORNEY	

*Instructions: The information contained in this document is COMPANY CONFIDENTIAL and may not be disclosed to others without prior authorization. Submit this disclosure to the HP Legal Department as soon as possible. No patent protection is possible until a patent application is authorized, prepared, and submitted to the Government.*

Descriptive Title of Invention: <u>Novel emitter for ARS <del>copy</del> application</u>				
Name of Project: ARS				
Product Name or Number:				
Was a description of the invention published, or are you planning to publish? If so, the date(s) and publication(s): NO				
Was a product including the invention announced, offered for sale, sold, or is such activity proposed? If so, the date(s) and location(s): NO				
Was the invention disclosed to anyone outside of HP, or will such disclosure occur? If so, the date(s) and name(s): NO				
<i>If any of the above situations will occur within 3 months, call your IP attorney or the Legal Department now at 1-800-4919 or 970-898-4919.</i>				
Was the invention described in a lab book or other record? If so, please identify (lab book #, etc.) NO				
Was the invention built or tested? If so, the date: NO				
Was this invention made under a government contract? If so, the agency and contract number: NO				
<p>Description of Invention: Please preserve all records of the invention and attach additional pages for the following. Each additional page should be signed and dated by the inventor(s) and witness(es).</p> <p>A. Prior solutions and their disadvantages (if available, attach copies of product literature, technical articles, patents, etc.).      B. Problems solved by the invention.      C. Advantages of the invention over what has been done before.      D. Description of the construction and operation of the invention (include appropriate schematic, block, &amp; timing diagrams; drawings; samples; graphs; flowcharts; computer listings; test results; etc.)</p>				
Signature of Inventor(s): Pursuant to my (our) employment agreement, I (we) submit this disclosure on this date: [ 4-13-2000 ]				
Employee No.	Name	Signature	Telnet	Mailstop
461217	Janice H. Nickel	Janice H. Nickel	8575299	21-8 041915
Employee No.	Name	Signature	Telnet	Mailstop
848322	Carl R. Fisher	Carl R. Fisher	6-231-2120	AS/ALSTC
Employee No.	Name	Signature	Telnet	Mailstop
Employee No.	Name	Signature	Telnet	Mailstop
(If more than four inventors, include additional information on another copy of this form and attach to this document)				

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<b>HEWLETT PACKARD INVENTION DISCLOSURE</b>		COMPANY CONFIDENTIAL	PAGE _____ OF _____
Signature of Witness(es): (Please try to obtain the signature of the person(s) to whom invention was first disclosed.) The invention was first explained to, and understood by, me (us) on this date: [ ]			
Full Name <i>Alison Chaiken</i>	Signature <i>Ali Chai</i>	Date of Signature <i>4/13/2000</i>	
Full Name	Signature	Date of Signature	
<b>Inventor &amp; Home Address Information:</b> (If more than four inventors, include add'l. information on a copy of this form & attach to this document)			
Inventor's Full Name <i>Janice H. Nickel</i>			
Street <i>1772 Kimberly Dr</i>		State <i>CA</i>	Zip <i>94087</i>
Do you have a Residential P.O. Address? P.O. BOX	City	State	Zip
Created as (nickname, middle name, etc.) <i>USA</i> Citizenship			
Inventor's Full Name			
Street		State	Zip
City		State	Zip
Do you have a Residential P.O. Address? P.O. BOX	City	State	Zip
Created as (nickname, middle name, etc.) Citizenship			
Inventor's Full Name			
Street		State	Zip
City		State	Zip
Do you have a Residential P.O. Address? P.O. BOX	City	State	Zip
Created as (nickname, middle name, etc.) Citizenship			
Inventor's Full Name			
Street		State	Zip
City		State	Zip
Do you have a Residential P.O. Address? P.O. BOX	City	State	Zip
Created as (nickname, middle name, etc.) Citizenship			

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**Description of Invention:** Please preserve all records of the invention and attach additional pages for the following. Each additional page should be signed and dated by the inventor(s) and witness(es).

- A. Prior solutions and their disadvantages (if available, attach copies of product literature, technical articles, patents, etc.).

Probe tips similar to SEM and AFM tips, however they have problems with (1) sensitivity to impact, (2) directionality of electrons emitted (3) loss of material from tip due to energy greater than workfunction, deteriorating the effectiveness of the tip

- B. Problems solved by the invention.

Buckytubes are very rugged, can crash into media and "bounce" back. Do not ruin "tip" if touches media.

Due to aspect ~~ratio~~<sup>length</sup> ratio of buckytubes, the electrons emitted are highly directional (have problems w/ directionality in prior art) Molecules are highly bonded, won't lose material from tip.

- C. Advantages of the invention over what has been done before.

see above ↑

- D. Description of the construction and operation of the invention (include appropriate schematic, block, & timing diagrams; drawings; samples; graphs; flowcharts; computer listings; test results; etc.)

Use buckytubes as the electron emitter for ARS project. Could use them as emitters for other applications as well.

